



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,719	07/01/2003	Simon Fenney	R&G 359	6086

23474 7590 03/18/2005

FLYNN THIEL BOUTELL & TANIS, P.C.  
2026 RAMBLING ROAD  
KALAMAZOO, MI 49008-1699

EXAMINER
----------

CASCHERA, ANTONIO A

ART UNIT	PAPER NUMBER
----------	--------------

2676

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/611,719

Applicant(s)

FENNEY ET AL.

Examiner

Antonio A Caschera

Art Unit

2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11, 14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/08/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 12/02/2004 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.
3. The information disclosure statement (IDS) submitted on 12/08/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

Art Unit: 2676

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: #2, 4, 6, 8, 12 and 14 (mentioned on page 3 of the specification, referring to Figure 2). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

5. Claim 7 is objected to because of the following informalities:
- a. The phrase, "...in which the step of tangent vectors are defined in local tangent space," (see lines 1-2 of claim 7) should be replaced with, "...in which the surface tangent vector deriving means defines tangent vectors in local tangent space," in order to conform with the "means for deriving surface tangent vectors" clause of independent claim 6, which claim 7 depends upon.

Appropriate correction is required.

*Claims Status*

6. The cancellation of claims 12 and 13 in Preliminary Amendment filed, 7/1/2003, is noted.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 4, 6, 7, 9, 11, 14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Munshi et al. (U.S. Patent 6,850,244 B2).

In reference to claims 1, 6, 11, 14 and 15, Munshi et al. discloses a system and method for providing surface texture in a graphics image rendered by a graphics processing system (see column 2, lines 25-27). Munshi et al. discloses the graphics processing system performing 3D graphics functions on graphics data (see column 3, lines 50-52). Note, since Munshi et al. discloses the system implemented via a computer system (see column 3, lines 4-5), the office interprets that the methods of Munshi et al. are inherently processed, “substantially in real time,” as recited in applicant’s claims. Munshi et al. discloses a gradient mapping engine and a triangle engine, comprised within the graphics processing system, the gradient mapping engine receiving pixel location and texture data from the triangle engine (see column 4, lines 3-10 and #132, 208 and 210 of Figure 2). Munshi et al. discloses the texture data to include a normal vector which is further defined as a vector normal to a surface in which pixel data is located (see column 4, lines

Art Unit: 2676

3-10 and column 2, lines 27-30). Munshi et al. discloses receiving predefined bump map coordinates of texels used in calculating a perturbed normal (see column 4, lines 34-38). Munshi et al. discloses a bump map filter providing the gradient mapping engine with bilinearly filtered pixel values (see column 4, lines 50-55). Note, the office interprets that the bilinear filtering of Munshi et al. inherently discloses filtering “partially overlapping samples of the texture data,” as Munshi et al. discloses the bump map data to be in the form of texels and since texels represent more than one screen pixel, filtering texels inherently discloses filtering partially overlapping samples of texture data. Munshi et al. also discloses calculating surface tangent vectors using the filtered bump map data, magnitude scaling values and tangent vectors along u and v axes (see column 5, lines 6-56, the surface tangent vectors are interpreted as the two elements of equation “ $D=...$ ”,  $(f_u * P_u * scale_u)$  and  $(f_v * P_v * scale_v)$  also see, column 2, lines 30-37). Munshi et al. discloses calculating a perturbed normal of a polygon surface from the above disclosed tangent vectors (see column 5, lines 6-56, see  $N'$ ) which the office interprets equivalent to the bump map surface normal of applicant’s claims. In reference to claim 11, Munshi et al. discloses means for assigning color data processing means to the generation of bump map data for use in applying texture data to an image since Munshi et al. discloses the graphics system altering color values of pixels having a normal vector normal to a surface in which the pixels are located by calculating the color values for the pixels based on a perturbed normal vector (see column 2, lines 25-30).

In reference to claims 2 and 7, Munshi et al. discloses all of the claim limitations as applied to claims 1 and 6 respectively above in addition, Munshi et al. discloses defining the two tangent vectors in local tangent space as Munshi et al. discloses the two elements of equation “ $D$ ” as,  $(f_u * P_u * scale_u)$  and  $(f_v * P_v * scale_v)$ , both defined in the bump map and texture u,v

Art Unit: 2676

coordinate space (see column 5, lines 30-35), which the office interprets functionally equivalent to a "local tangent space."

In reference to claims 4 and 9, Munshi et al. discloses all of the claim limitations as applied to claims 1 and 6 respectively above in addition, Munshi et al. discloses the gradient mapping engine receiving pixel associated data (see column 4, lines 3-6) and the bump map filtering comprised within the graphic mapping engine (see column 4, lines 31-35 and #300 and 316 of Figure 3). Therefore, since color channels (RGB, CMYK, YUV etc) are inherently associated with pixel data, the office interprets that Munshi et al. inherently discloses using existing color channel hardware to filter texture data.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munshi et al. (U.S. Patent 6,850,244 B2).

In reference to claim 3 and 8, Munshi et al. discloses all of the claim limitations as applied to claims 1 and 6 respectively above. Munshi et al. does not, however, explicitly disclose filtering texture data using bi-quadratic B-splines to model height surfaces however, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the specific type of bi-quadratic filtering using B-splines of applicant as such a

Art Unit: 2676

feature solely defines the amount of detail in the final output which in turn, is the choice of the designer as to how accurate, using more sophisticated filtering techniques, vs. how quickly his/her system should operate at. Applicant has not disclosed that bi-quadratic B-spline filtering provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the bilinear filtering of Munshi et al. because the exact type of filter used is a matter design choice as to what is preferred by the designer and to which best suits the application at hand. Therefore, it would have been obvious to one of ordinary skill in this art to modify Munshi et al. to obtain the invention as specified in claims 3 and 8 respectively.

9. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munshi et al. (U.S. Patent 6,850,244 B2) in view of Bikker (Bilinear Filtering (Interpolation)). Jan 13. 1999. [http://www.flipcode.com/articles/article\\_bilinearfiltering.shtml](http://www.flipcode.com/articles/article_bilinearfiltering.shtml). Accessed on 3/10/05).

In reference to claims 5 and 10, Munshi et al. discloses all of the claim limitations as applied to claims 3 and 8 respectively above. Munshi et al. does not, however, explicitly disclose the filtering including blending factors however Bikker does. Bikker discloses a process of bilinear interpolation of texture data wherein weight factors are determined and used in performing the filtering (see page 1, 1<sup>st</sup> -4<sup>th</sup> paragraph and bullets 1-4 of Bikker). Note, the office interprets the weight factors of Bikker functionally equivalent to the "blending factors" of applicant's claims. It would have been obvious to one of ordinary skill in the art to implement the weight factors in bilinear interpolation of Bikker with the gradient mapping techniques of Munshi et al. in order to generate the best possible interpolated value for pixels by taking into

Art Unit: 2676

account and integrating more than one sample value into the interpolated pixel value (see page 1, 2<sup>nd</sup> paragraph of Bikker).

### ***References Cited***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Wloka et al. (U.S. Patent 6,765,584 B1)
  - Wloka et al. discloses a system and method for creating a vector map in a hardware graphic pipeline to render a plurality of pixels using the vector map.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (571) 272-7778.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

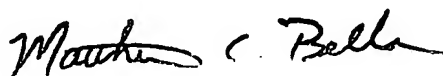
Art Unit: 2676

**(703) 872-9314 (for Technology Center 2600 only)**

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

3/10/05

A handwritten signature in black ink, appearing to read "Matthew C. Bella". The signature is fluid and cursive, with the first name "Matthew" and last name "Bella" clearly distinguishable.

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600